1.0 Statement of Work Tumaco ARAVI Area Security Fence Project

1.1 General

The offeror shall provide all labor, materials, equipment, machinery, and components to construct the requested fence/structure. The offeror shall provide for review and approval complete design and drawings to include fence, footer and drainage; material properties for the fence/structure to be provided and clearly identify an ability to support the logistical and security requirements associated with project execution.

The offeror shall have the capability of providing the construction requested which can be easily installed in an austere location with varying types of terrain, requirements and considerations to include personnel and equipment force protection. Once installed, the system shall offer immediate stability meeting all appropriate Colombian construction and structural codes and Colombian AeroNautica Civil standards. The system shall include all required accessories, such as truss rods, truss rod tightners, chain link tension wire, and protection elements.

Assembly Process.

The offeror shall provide and assemble the system according to the following procedures:

1.2.1 A geotechnical survey of an adjacent area will be provided; however, the offeror is solely responsible for fence line geotechnical survey, the design of the defense fence/structures and shall submit for review by the Contracting Officers Technical Review Panel a detailed report, which is to include the technical requirements, material requirements, design and drawings of the defense system fence/structures, the recommended approach for the project and detailed timeline, GANTT Chart and Critical Path diagram.

1.2.2 Transportation of Materials. The offeror is responsible for coordinating the transportation of all required material for assembling the fence/structure requested. The offeror is responsible for ensuring that all project material is delivered in the appropriate and timely manner, taking the necessary precautions to avoid any damage to the material during transport and full consideration and responsibility for all transportation security requirements. The offeror must also take into consideration the transportation of project waste and excavation material from the work site to an approved dump or land fill.

1.2.3 Assembly of the fence/structure. The offeror is solely responsible for the mounting, installation, and assembly of the fence/structure in a safe, proper and timely manner.

1.2.4 Fill Material The offeror shall conduct a site specific geotechnical survey and shall ensure the site properties meet the required physical properties to support the

fence/structure offered. Should the offeror require any fill material located at a different site to be used as fill material for the site the offeror shall take soil samples and/or perform other appropriate soil studies to determine suitability of said material. The offeror is responsible for ensuring that the fill material used in support of the project is adequate for the purpose used and meets all National, Aeronautica Civil Standards and Codes.

1.2.5 If delivery of fill material is necessary, the offeror shall include the location where appropriate fill material is to be obtained. The offeror is solely responsible for the acquisition of and quality of all fill material

1.2.6 Equipment and Machinery. For each project, the offeror shall identify, procure or rent the appropriate equipment and machinery to be used, based on the project requirements.

1.3 Site preparation. For the entire scope of the project, the offeror shall identify all tasks required to install the requested fence/structure, including but not limited to disassembly/removal of existing fencing and structures. If any surface or subsurface obstacle is encountered it will be removed and properly disposed of or if required (i.e. fencing, utilities, aqueduct, sewage line etc), will be properly relocated/rerouted to allow for the construction. All work must be performed in accordance with the latest appropriate Colombian National codes.

1.4 Water and sewage services. When required, ensure proper relocation/rerouting of all pipes and lines. These items will be detailed and individually priced. The offeror shall indicate in its proposal how it plans to manage this task. The offeror shall provide a civil-hydraulic certified engineer for completing the work with demonstrated, relevant experience for design and on-site supervision. All work shall be performed in accordance with the latest appropriate Colombian National codes.

1.5 Power services. The offeror shall identify all tasks required to provide power services. These items will be detailed and individually priced. The offeror will install and connect to Tumaco public power grid all electrical required to support the offerors construction effort. The offeror shall indicate in its proposal how it plans to manage this task. The offeror shall provide a certified electrical engineer for the completion of electrical installations and equipment with demonstrated, relevant experience for design and on-site work. This task includes but is not limited to: external movable spotlights; reflectors; system planning and construction of electrical infrastructure (if required posts, cabling, substations, transformer, and generators, etc.), in accordance with the latest appropriate Colombian National codes.

2.0 Delivery Location and Time.

The contractor shall deliver all defense system/fencing material and components to the work sites by the date and time specified.

The contractor shall be responsible for ensuring that its personnel and subcontractors follow all special instructions for delivering materials, as may be specified. This applies to any outside sources or subcontractors that might be delivering materials to a project site on behalf of the contractor. The contractor is responsible for the security of the material and components.

3.0 Completion, inspection, and delivery

The offeror shall include a project management tool (Gantt chart, critical path, or equivalent) indicating preparation, delivery, installation, clean up/turn over, and related tasks, this tool shall be updated upon award of the contract and maintained to date throughout the project as required.

4.0 Specifications.

4.1 General.

The fence/structure shall follow the Aeronautica Civil's Statement of Work specifications included below under Section (6).

4.1 Fence Material Treatment.

All metal fence material will be galvanized and treated to specification to inhibit rust. All welding of the galvanized material will be executed with safety precautions in place that give full consideration to the requirements associated with welding galvanized metal and all welds will be treated to inhibit rust, and welding must not damage or weaken the fence structure.

4.2 Maintenance.

Following installation, the installed fence/structure design shall facilitate ease of maintenance. All damages - environmental, accidental or combat-related - shall be easily corrected using the same materials as were used in the original construction. During the warranty period any damage related to poor site preparation, design, quality of material or construction shall be repaired by the offeror**.** All damages shall be repaired in such a manner so that the repaired fence/structure has the same quality, resistance and provides the level of protection as before the damage occurred.

4.3 Warranty.

The offeror shall provide a fence/structure that will remain stable with the required level of airfield security for a minimum period of 10 years. During the ten-year period following installation, the constructed fence/structure shall be able to retain its quality and protective properties. The warranty will cover all of the components used to construct the fence to include labor-- for 10 years.

5 **Supply and Required Components.** The offeror shall at a minimum provide the fence components addressed in Section (6)

Section 6

TECHNICAL SPECIFICATIONS

6. ENCLOSURE TYPE I

General Information

The project consists of the construction of 1,153 meters (M) of chain link fence minimum 10 gauge covered in PVC, Fence Height = minimum of 2.0 mt, supported and joined by a reinforced concrete tie beam using steel-reinforcement D = ¾ "for longitudinal reinforcement and smooth steel D = ¼ for stirrup, with a cyclopean concrete foundation with a minimum section of (0.3 m x 0. 4 m) and a length of 1,000 M.

6.1 CLEARING AND CLEANING (LM)

General information

Site preparation will consist of clearing and grubbing of the project area, specifically a minimum of 2 m wide area along the fence centerline for the entire length of the 1,000 M fence. Vegetation will be cut to a minimum height of approximately 5 to 20 cm. This task will be done manually as not to move any existing reference points. Excess material from this process must be completely and safely removed from the site and dumped at a contract pre-approve site.

Equipment

The above shall be executed with the appropriate equipment, specific to address the site conditions and shall be approved prior to the commencement of work by the US Government Contracting officer and Contracting Officer Representative (COR) and specified in the contract.

Method of measurement (LM)

The unit of measure for this portion of the project shall be in linear meters per the specified width.

Excavations

6.2 MANUAL (M3)

General Information

The contractor shall perform the necessary excavations in accordance with the fence line track and width dimensions required. The excavation for the cyclopean concrete footer will be in a length of 1,000 M, and minimum width of 0.3 m x 0.4 m. The excavation for the foundation of the support angle footer will be a minimum of 0.3 m x 0.3 m x 0.4 m (note: site conditions may require a higher footer and piles to allow for terrain and to maintain proper fence alignment as the fence will be the same height throughout with no undulation and must not be submerged during normal tidal cycles).

The contractor shall execute their operations in a continuous/sequential manner and according to the approved work plan. Contractor shall not execute any excavation until requisite measurements are taken and stakes are in place.

Classification

The excavations shall not be classified, whatever the type of material is on site is what is required to be excavated.

Equipment

The above task shall be executed taking into account site soil and terrain conditions and upon approval of both the US Government Contracting officer and Contracting Officer Representative (COR)

Drainage

The contractor shall execute the excavation necessary in accordance with the alignment, dimensions and grade required. The contractor shall assume the task's risk and take required measures to maintain the excavation sites and work areas clean/clear/free of debris and properly drained. Where necessary the contractor will install temporary and/or permanent trenches and drainage so as to ensure water does not negatively impact project work. Where the bottom of the excavation contains inappropriate material, the contractor must remove the material and execute the required work to ensure an adequate excavation finish.

Leftover material

Upon completion of the excavation the contractor shall remove and deliver all excess/leftover material to an approved dump site. Note: this material must be removed as work progresses and not be allowed to accumulate throughout the project.

Unit of Measure (M3)

The unit of measure for this item shall be cubic meters of material excavated at the site.

6.3 CYCLOPEAN CONCRETE (M^3)

General Information

The cyclopean concrete for the foundations shall have a proportion of 60% simple concrete of 3.000 P.S.I and 40% clean fractured stone, exempt of weathering parts and with an approximate size of 20 centimeters with a maximum width of 1 ½ -inch long. Length of cyclopean concrete base will be 1,000 M. The section of cyclopean concrete shall be a minimum of of 0.3 m X 0.4 m (site conditions may require more). Basic specifications and code for concrete shall be met.

Measuring Method

The measuring unit for this item shall be in cubic meters.

6.4 TIE BEAM (M3)

General

The concrete tie beam shall have a section of a minimum of 0.2 x 0.3m. in a length of 1,000 M. The concrete pedestals will have a section of a minimum 0.3 x 0.3 x 0.4 m with vertical galvanized posts inserted in the concrete which shall be a minimum of 3.000 P.S.I (F`c= 210 Kg/cm2), meeting all basic specifications for the specified concrete.

Measuring Method

The unit of measure for this section shall be in cubic meters.

6.5 Y 6.6 STEEL Re-BAR F'= 2400 Kg/Cm2 D= 3/8", SMOOTH STEEL F'= 2400 Kg/Cm2 D= 1/4" (Kg)

General

Reinforcement rods shall be steel re-bar for the longitudinal steel of the tie beam and smooth steel for the stirrups. It shall meet the code/specification of ICONTEC 248 and for steel AH63. For diameter of 3/8" (F`y= 2.400 Kg/cm2) Re-Bar shall be used and for diameters of less than 1/4" AH 24 smooth rods shall be used according to the ICONTEC rule 161. Note: The reinforcement shown in the attached Aeronautica Civil-drawings only shows the general location and the typical types of rods.

Construction Method

The contractor will provide all labor, materials and equipment for the execution of all work shown and specified in the plans. All work shall be subject to inspection and approval of the US Government Representative (COR).

Placing the reinforcement

The reinforcement shall be placed as specified in the plans and shall be properly secured in place for and during the pouring process. Rods shall be tied at the intersections. The reinforcement shall be supported by wire bolsters or concrete spacers, previously approved by the US Government Representative (COR). The contractor shall immediately provide details when requested by the US Government Representative (COR).

Unit of Measure

The unit of measure for this Item will be (Kg) of steel used /installed.

ANCHORING FENCE MORTAR

The anchoring fence mortar mix design shall have a proportion 1:4of cement-sand. The lower part of the fencing material/mesh shall be anchored in a cement-sand mix in a proportion of 1:4, in order to fix it to the tie beam, which will have a base triangle 0.20m shape and 0.05m high embedded in the fence, in order to guarantee a uniform finish of the concrete.

6.8 No 8 Gauge STEEL TENSION WIRE

A # 8 gauge galvanized tension wire shall be installed in the upper and lower part of the mesh to avoids the loosening of the mesh. Reference the statement of work and Aeronautica drawing provided

6.9 WIRE MESH H: 2m (M^2)

This work is comprised of all activities required for the construction and completion of a fence constructed utilizing a 10 gauge (interior), (8 gauge exterior) wire mesh which shall meet the rule of 80 grams of galvanized/m^2, and the galvanized percentage shall be certified in the offer. The fence shall be installed at the site / along the center line specifically addressed in the solicitation and addressed during the contract pre-award site visit.

This task also comprises the following sub-activities:

- Supply and installation of galvanized steel posts with a diameter of 2" and 3.0m long.
- Supply and installation of reinforcement diagonals in galvanized rail pipe, with a diameter of 2" and 3.20m long.
- Supply and installation of anti-seismic tie down brackets in galvanized piping with a diameter of 2" and from 2.6 to 3.0m long.
- Supply and installation of 10 gauge PVC coated wired mesh, galvanized wire mesh, that meets the code/specification of 80g of galvanization /m2.
- Supply and installation of 14 gauge barbed wire.
- Supply and utilize welding equipment and labor (welding must be performed by a certified welder).
- Supply and installation of tension wire in the lower and upper side of the mesh.
- Supply and installation of a flange plate to fix the mesh to the frames.
- Supply and place the anchor cement to the mesh.
- All welded joints are to be protected by applying zinc-rich paint in accordance with ASTM Practice A780.
- Supply two securable pedestrian gates (sites to be designated during preconstruction conference)

Each of these sub-activities will be accepted after inspection by the US Government Representative (COR).

Materials

According to the requirements, the only material that can be used is that material previously approved by the US Government Representative (COR). Material may be subject to announced or unannounced inspection and tests prior to starting the project, and/or during project execution. Sources of all the materials shall be approved prior to use.

6.10, 6.11, 6.12 POSTS, RAILS, SUPPORT FLANGES AND TIE DOWN BRACKETS

Post, support flanges and tie down brackets shall be made of galvanized material, their diameters/measurements shall comply with what is indicated in the contract and described in the Project plans and-must include all elbows, caps, anchors and accessories necessary for proper installation.

6.13 FOUNDATION FOR THE LATERAL SUPPORT BRACKETS IN CONCRETE (m^3)

At each 50 meter point there shall be installed anti-seismic lateral support brackets with a vertical angle of approximately 30 and 40 degrees, welded, on the upper part, to the vertical posts and anchored on the lower part 0.30m in a foundation of 0.4 x 0.3 x 0.3 simple 3.000 PSI concrete. The total length for each lateral support bracket shall be approximately 2.60m to 3.0m..

6.14 SUPPLY AND INSTALLATION OF FOUR STRANDS OF BARB WIRE (M)

The galvanized barbed wire must be 14 gauge, double thread, triple twisted with a minimum separation of 13 cm between barbs with 4 points per barb.

6.15 SUPPLY AND INSTALLATION OF BARB WIRE MOUNTING PLATE (EA)

The barb mounting plate shall be of 1/8" * 1/2" and 1.95m high. It shall be installed over the 2” galvanized post and affixed with welding points guaranteeing optimal stability and security.

6.17 SUPPLY AND INSTALLATION OF APPROPRIATE GROUNDING

The fence shall be properly grounded, as required, to ensure it does not conduct electricity. A licensed electrical contractor shall install grounding.

CONSTRUCTION

The Contractor shall supply labor, materials and equipment necessary for the execution of the work specified in the plans and the statement of work. Post supporting the mesh shall be 2” diameter galvanized each spaced 2.5m between axis with an anchoring depth of 0.50m and free vertical height of 2m; additionally, it shall have an angled section of 0.50m long and 45 degrees in relation to the horizontal, which shall have rings symmetrically placed to receive 4 strands of barbed wires. The total length of the post shall be 3.0m.

At each 15m, and in all changes of direction over 30 degrees, a 2" diameter galvanized diagonal piping shall be placed on both sides of the pipe braced and welded to the ends of the vertical post. Each diagonal pipe shall be 3.20m long.

Additionally, each 50 meters anti-seismic lateral support brackets will be placed with an angle of approximately 30 - 40 degrees in relation to the vertical. They shall be welded on the upper part of the vertical post and anchored on the lower part 0.30m in a 3.000 PSI simple concrete footer of 0.4 x 0.3 x 0.3. The total length of each lateral support bracket shall be approximately 2.60m and 3.0m.

All diagonal post and lateral support brackets shall be galvanized. Once the post, diagonals and lateral support brackets are installed, the galvanized mesh fencing material will be installed continuously for every 20m or up to a location that has a change of direction. Secured to the post with either 10 gauge galvanized wire ties or galvanized tension bands, separated at a distance of no more than 0.30m, except each 2.5m where a galvanized holding plate will be welded to the post and then protected using wash primer and enamel aluminum color.

After that, a #8 galvanized tension wire shall be installed. It shall be installed so as to avoid the loosening of the mesh. In the tilted part of the post, there shall be 4 strands of barbed wire tightly fixed to the rings.

In the lower part of the mesh there shall be cement-sand mortar footer in a 1:4 proportion, in order to fix it to the lateral support beam, and will have a triangular shape with base 0.20m and 0.05m high, with a vertex in the mesh and a uniform finish, so that it does not sink nor protrude.

The continuous concrete footer shall be constructed with ample height as to ensure rising tide does not touch the fence structure and to ensure proper alignment with zero undulation..

The work requested shall be performed by qualified labor, adhering to or exceeding all specifications in the statement of work.

UNIT OF MEASURE

The unit of measure utilized for payment (galvanized wired mesh cal. 10.) will be the square meter, duly constructed and received by the INL Contracting Officer or COR.

ITEM	DESCRIPTION	MEASURING UNIT
6.1	Land Clearance and cleaning (width no less than = 2.0m along center line)	M

6.2	Manual Excavations (Tie beam and Tie down brackets)	M3
6.3	Cyclopean Concrete Section (no less than 0.3m x 0.4m)	M3
6.4	Tie beam (0.2 x 0.3m) and pedestal (0.3 x 0.3 x.0.4) in concrete F`c= 211 Kg/cm2.	M3
6.5	Corrugated steel F`y= 2.400 Kg/cm2 DIAM 3/8"	KG
6.6	Flat steel F`y= 2.400 Kg/cm2 DIAM 1/4"	KG
6.7	Fixing mortar 1:4 5cm thick .	M
6.8	Steel tensor No 8	M
6.9	Supply and installation of pvc coated wire mesh and installation of 10 gauge H: 2m.	M2
6.10	Supply and installation of a galvanized pipe (D: 2", long : 3m) includes galvanized caps and varnish	EA
6.11	Galvanized supporting feet D=2" each 6 modules 6m long and varnish.	EA
6.12	Galvanized tie down brackets D=2" 3m long and varnish.	EA
6.13	Foundation for the simple concrete tie down bracket F`c=211 Kg/cm2 de Section 0.4m x 0.3m x 0.3m	M3
6.14	Supply and installation of barbed wire 14 gauge with double twisted thread.	M
6.15	Supply and installation of a 1/8" * 1/2" , 2.00m high plate	EA

The holding plate shall be of 1/8" * 1/2" and 2.00m high. It shall be installed along the 2" galvanized post and affixed using welds in order to guarantee maximum stability.

CHAPTER 7

WORKING CONDITIONS

MATERIAL

When the contractor has to transit/utilize perimeter airport paved or unimproved roads, he/she shall take into account the maximum load allowed and equipment capability when choosing the equipment (truck HS-20-44 AASHTO). Additionally as part of the contract, the Contractor shall execute all access road improvement and maintenance.

The transit of any equipment over any section of the runway, taxiways or aircraft parking aprons/platforms is not permitted. Tracked vehicles are expressly prohibited from transit over any airport paved surface.

DETAILED WORK PLAN

The offeror shall provide a Critical Path Diagram and Gantt chart as part of the offer and the contractor must do likewise throughout the performance period as requested by the US Government Representative (COR).

RESTRICTIONS FOR THE PERFORMANCE OF WORK

- The contractor shall coordinate all activities with the local senior Police and Military commanders, airport manager and INL COR, (day and night work schedule if permitted),

- As applicable, in order to ensure uninterrupted airport operations the contractor shall schedule, along with the appropriate airport authority personnel, the execution of the all work to guarantee the safety of all parties.

- If currently, there are areas occupied by third parties, the clearance of those areas shall be coordinated, on time, with the Senior Area Police and or Military Commander (BACNA), the Airport Manager, and US Government Representative (COR).

- The contractor shall provide appropriate light-signals, signage and reflective tape on stable post along the entire working area and the access roads.

ACCESS ROADS

Contractor equipment is not permitted under any circumstance to transit along the road in front of the terminal building without coordinating with both the airport manager and DIRAN Colombian National Police. The disposal of excavation material, waste etc. and the access of construction material and personnel shall be carried out at times that do not create traffic congestion on roads accessing the airport or access roads to the work site. . When necessary, the airport manager local Military and Police Commanders may modify the contractor's transportation schedule, at no additional cost or additional terms of the contract.

CONTRACTOR INSTALLATIONS

The Contractor is solely responsible for personnel housing off site and shall coordinate with the local Military Commander, airport manager and COR the onsite material storage and any other onsite requirements.
Above requirements shall be considered in the offer and shall not be considered for compensation post award.

ELECTRIC POWER AND TELECOMMUNICATIONS

As required the Contractor is responsible for and shall supply/install all-connections/wiring, transformers, circuit breakers, controls, and overall all electric installation necessary to obtain enough power and light to support the construction site. This plan will be submitted with the offer for technical review and approval. Electric installations executed by the Contractor shall meet ICONTEC norms, must be executed to the standard of the INL Contracting Officer's technical review panel and the local Power Authority. Unless otherwise agreed upon in the Contract or requested by the INL Contracting officer all electrical service connections will be removed and the site left to National Electric Code and the satisfaction of the Aeronautica Civil authority and the INL engineer team.
The Contractor must supply and maintain, at his own cost, telephones and other communications systems that may be required in relation to the work; all lines and permits will be the sole responsibility of the contractor and will be paid by the contractor. Utilities costs incurred by the contractor for the execution of the work will be assumed by the contractor.

STANDARD SPECIFICATIONS

Material, equipment and elements supplied by the Contractor shall meet the following Codes :

- Colombian anti-seismic code NSR – 10
- Codes issued by the Ministry of Transportation.
- Local and National Power Authority Electric Codes
- American Association of State Highway and Transportation official (AASHTO).
- American Society for Testing and Materials (ASTM).

DRAWINGS AND SPECIFICATIONS

The Contractor shall strictly adhere to the Drawings and Statement of Work of the project which are provided for the purpose of this contract by the Colombian Civil Aviation Authority's Special Administrative Unit (UNIDAD ADMINISTRATIVA ESPECIAL DE AERONÁUTICA CIVIL). Any suggestion or modification to the plans or the specifications that the Contractor wants to communicate to the Unidad Administrativa Especial de Aeronáutica Civil shall be done on writing via the US Government Representative (COR). To cover risk associated with the project the Contractor shall obtain appropriate insurance coverage. At the end of the project, if during the project there are any contract approved changes, the Contractor is responsible to deliver to the US Government Representative (COR) all updated specifications and drawings in both printed and electronic media.

SECURITY

DESCRIPTION

Airport security is a set of preventive control measures that must be fully complied with by all users of public airports in the country. The administrator or manager of each airport is responsible for Airport security and must make sure that the norms within the "Programa Nacional de Seguridad Aeroportuaria" and in the "Plan de Seguridad del Aeropuerto" are met. Up to and throughout the contract the Contractor, his staff and all sub-contracted personnel are obligated to comply. As this area is also a Colombian National Police operational site the local DIRAN CNP commander will be consulted and coordinated with throughout the entire project's performance of work..

CONSTRUCTION OPERATIONS

- **Entrance to restricted areas of the airport.**

  Authorization to enter restricted areas, such as: CNP site, runways, ramps and other aircraft movement areas, must be requested by the Contractor for him, his staff and vehicles and equipment. This process will be accomplished by submitting a complete list of all Contractor personnel, vehicles and equipment to the US Government Representative (COR) two weeks prior to the initiation of any visits, preparation or work at the site. Once on site all movement of personnel, vehicles and equipment will be coordinated with the local Colombian National Police Commander, BRACNA Commander, and the Airport manager. If the Airport Manager's, Military, or Police Commander's guidance impact the project in any manner, the INL Contracting Officer or COR shall be immediately notified.

- **Work in aircraft operation zones**.

When work is executed in aircraft operation areas, especially in the vicinity of runways, taxi ways, parking aprons or security zones, the contractor must inform and receive approval from the Airport Manager or Administrator, as applicable to this project the CNP air wing commander, to allow for personnel, vehicular and equipment access. Full compliance with this coordination and adherence to Airport and CNP Air Authority guidance and recommendations is mandatory. The contractor shall be held responsible for the omission or violation of security measures established by the "Programa Nacional de Seguridad Aeroportuaria" and other norms that complete it or modify it. If the airport manager's guidance impacts the scope of work/the contract, the proper US Government Representative (INL Contracting Officer or COR) shall be immediately notified.

- **Communication**

  For the purpose of this contract the contractor is obligated to be in constant communication with the Airport Manager or Administrator, the Area Police and Military Commanders. This communication must preferably be accomplished by radio in order to guarantee that the Area Military and Police Commanders, Airport Manager and personnel in charge of aerial operations have timely and first-hand knowledge of the approval and location of the staff, material, vehicles and equipment. If the control tower authority or any other authority mentioned herein does not authorize the entrance of staff, vehicles, equipment or material, the contractor shall not be able to do so. The contractor shall agree with the Airport Manager and CNP Air Wing Commander, and all other authorities mentioned herein on an effective means of communication in order to guarantee, at all times, the security and safety of the airfield, contractor personnel and work site

- **Airport Operations Handbook.**

  All vehicles required by the contractor to execute the project within the airport's restricted area or Military Camp, must meet the provisions established in the Airport Operations Handbook through Resolution 02076/1997 and must be cleared by the Police and Military and Commander on site. If the vehicles and equipment required or the drivers / operators do not meet the specifications/norms of the Airport Operations Handbook or the Police and Military Commander's guidance, they shall not be allowed to enter the restricted areas and if they have done so, they shall be immediately ejected until all requirements are complied with. If the contractor's failure to comply with the above negatively impacts the project, the contractor will be held responsible and appropriate action shall be taken by the US Government Representative (COR) and INL Contracting Officer.

- **Airport Rules and Regulations**

  Contractors shall be responsible for the compliance of the norms established in the "Programa Nacional de Seguridad Aeroportuaria" and in the "Manual de Operaciones Aeroportuarias" as well as those set by the Area Military and Police Commanders. Violation of provisions in said

norms by the contractor or his/her employees shall result in the levy of sanctions and penalties.

- **Storage Area**

  a. The storage areas for materials or personal vehicles must be assigned by the Airport Manager in coordination with the area Police and Military Commanders.

  b. Material stored within the Airport property, shall not obstruct air navigation, the movement of the aircraft, or negatively impact the security of military and police personnel.

  c. Loose materials/foreign object debris (FOD) that may damage airplane landing gear, fuselage turbines (that may be absorbed by aircraft engines), must not be stored in active aircraft movement areas or in such a way that it poses a danger to aircraft operations..

  d. Piled material must be stored in a way that prevents it by any means from posing a threat to aircraft operations to include wind 10 Knots or more or aircraft wind shear. All piled material must be marked with orange flags and must have yellow flashing lights at all hours and especially visible during times of low visibility.

- **Open Ditches**

  a. All open ditches, or excavations within the Construction Area of Operations must be marked with functioning barricade lights and flags, properly secured to a stable post. Barricades must alternate with white and orange signal flags and must have flashing lights at least (18) inches high. Flags must be white and orange, of at least 50 x 50 centimeters and must be mounted on stable flag post. All barricades must be approved by the airport manager, Area Military and Police Commanders and US Government Representative (COR). The Contractor shall provide names and phone numbers of two individuals responsible for barricade signaling that can be contacted any time 24 hours a day seven days a week.

  b. All construction within 150 meters of a runway or within 32 meters of a taxiway or parking apron or will require temporary runway or taxiway closure must be marked with barricade lights and with flags as specified above. Temporarily closed runways must be marked with a cross set on top of the runway numbers (this will only be done with written approval of the Aeronautica Civil and communicated knowledge of all parties involved herein). Such cross must be at least 18.30 meters long and 3.05 meters wide. Crosses must be yellow and must be set in a way that they do not get damaged with strong winds. The frames can be made of fabric or plywood Material used for the construction all signage must be approved by the airport authorities and validated by the INL Contracting Officer.

c. Contractor equipment or construction material must not be stored within the Airport Operations Area during hours of low visibility or darkness without the previous authorization of the Airport Manager, Area Military and Police Commanders.

d. The use of open flame or torch to weld within any area of the airport is prohibited, unless the contractor has taken proper precaution within full compliance of all applicable codes and with the approval of the Airport Manager and Area Military and Police Commanders.

- **Vehicles**

a. Vehicular, equipment and pedestrian traffic shall not cross aircrafts movement areas (runways, taxiways or parking aprons). The Contractor is fully for all employee and subcontractor actions. Staff that does not comply with the rules and regulations of the Airport is subject to appropriate legal action and suits.

b. Vehicular, equipment and pedestrian traffic cannot access aircraft movement areas without the previous authorization of the Control Tower, there is no exception to this requirement.

c. To clearly identify the vehicles and equipment place initials or numbers, that are previously approved by the Airport Authority, that are a minimum (20) centimeters and must be a high visibility/easy to read color. The symbols can be applied with tape or paint.

d. All motor vehicles and equipment within the Airport Area of Operations must adhere to a maximum speed limit of 20 kilometers per hour.

e. Aircraft have priority over all motor vehicles, equipment and personnel..

- **Announcement to Pilots.**

Announcement to pilots about the construction must be given by the airport authorities. Construction causing the closure of the runway, taxiway or parking apron must last the minimum time possible and closing schedules must be agreed upon as soon as early as possible with the appropriate airport authority, within a maximum of 48 hours of the required closure.

- **Fires**

Fires are not permitted within the property of the Airport

- **Erosion**

Contractors must supply and implement, permanent erosion control and/or prevention measures, not only to maintain and protect the grade, pavement and other items, but also to reduce the potential contamination of any water sources.

- **Accidents**

  All accidents that cause personal injuries or that damage property shall be immediately reported to the Airport authority, Area Police and Military Commanders and the INL Contracting Officer or COR. In such cases, the contractor is responsible to provide the required first aid and equipment for first aid and evacuation to contractor/sub-contractor personnel injured during the performance of a task, may it be at or near the site that has resulted in injury, death, or damage to property. Complete details along with statements from witnesses must be provided to the INL Contracting Officer to be distributed to the Aeronautica Civil, Area Police and Military Commanders. If a death, serious injury or damage to property occurs, it must be immediately reported by radio, phone or in person to the Airport Manager/authority, Area Police and Military Commander and the INL Contracting Officer or COR.

- **Security**

  The Contractor is responsible for the security of his/her equipment and material. The Contractor shall adhere to/follow airport security regulations and ensure full compliance by his/her staff, subcontractors and associated personnel, specifically those regulations pertaining to but not limited to airport access, access to restricted areas and those areas that are permanently associated with aircraft operations. It is the responsibility of the Contractor to avoid security violations within the construction area or any area along the construction route.

- **Access Authorization and Entry Control Points**

  All personnel or vehicles accessing the airport and all areas therein must possess written authorization from the airport manager, Area Police and Military Commanders (no exceptions). From the moment of entrance and throughout the entire time onboard the airport / CNP installation all personnel, vehicles and equipment must possess and display written authorization as stated by the "Programa Nacional de Seguridad Aeroportuaria" and the "Manual de Operaciones Aeroportuarias"personnel ; vehicles and equipment are only authorized access within the area authorized by the Airport Manager, area Police and Military Commanders. The Airport Manager is the ultimate authority for all airport access, however, if access is denied by either the local Police or Military Commander that will be the decision and cannot be overridden by any of the three parties addressed herein. Entering into an area not specifically authorized will result in sanctions and possible eviction from the site. Authorization costs will be paid by the Contractor. At the end of the period of performance, or when a worker is dismissed or leaves the project, the contractor must return the permits and receive in writing acknowledgement of the permit return. This accountability procedure is the Contractor's responsibility. The contractor is fully responsible for all acts of permit

misuse by his employees and subcontractors. Any work delay or interruption of airport operations caused by a contractor's violation of airport security regulations is the exclusive responsibility of the contractor.

6. BASIC CONCRETE SPECIFICATIONS

7.1. GENERAL

This chapter includes the requirements related to material required for concrete, tests, inspections concrete form preparation, transport, pour, setting and repairing of all the concrete that shall be used in the construction of the project.

7.2. MATERIAL

7.2.1 General

The only materials that are authorized for use are those approved in the contract in accordance with the specifications of the statement of work. Material is subject to inspection and tests at any time during storage, preparation or use. Prior to construction, the supply source for material shall be approved by the US Government Representative (COR). When requested, representative samples of the material shall be submitted by the contractor for testing and evaluation. Material shall be stored and handled in such a manner as to ensure security, quality and consistency. Material shall be stored at a single site to allow for easy and prompt inspection. All equipment for transportation and handling of material and concrete shall be properly cleaned before pouring the concrete. Also all concrete delivery trucks shall be pre-cleared prior to entering the airport/CNP installation, this is the sole responsibility of the contractor and failure to do so may result in the vehicle being denied access to the work site and a loss of concrete material.

7.2.2. Coarse Aggregate

Coarse aggregate for concrete shall comply with the ASTM C-33 norm requirements. The wear rate shall not be greater than 40% with 500 RPM as stated in norm ASTM C-131. Coarse aggregates will be properly graded from course to fine and within gradation limits using the norm ASTM C-33.

7.2.3. Fine Aggregate

Fine aggregate for concrete shall comply with the requirements of the norm ASTM C-33. Fine aggregates shall be properly graded from fine to coarse and shall be within the gradation limits shown and within gradation limits using the norm ASTM

C-33. Homogenization shall be allowed if necessary, in order to fulfill the granulometric requirements for fine aggregates. Fine deficient aggregates with a low material percentage passing sieve No. 50 can be accepted given that such deficiency is not greater than 5% and can be offset with the addition of pozzolonic and cementitious materials different to Portland cement as specified in 5.3.8.2.6 or additives necessary to produce the standard as approved by the US Government Representative (COR).

7.2.4. Cement

The cement used shall be of good quality, from a source approved by US Government Representative (COR), and shall comply with Portland Cement requirements, in accordance with ASTM C-150.

7.2.5. Water

Water used in concrete shall be free of organic matter, oil, alkali, salts, vegetation, clay and mud and other contaminants. If the water is of questionable quality, it shall be tested and certified according to AASHTO T-26.The contractor is solely responsible for obtaining clean, fresh water for concrete mixing and shall ensure that a proper amount is kept on site to allow for continuous operations as required throughout the appropriate phases of the contract.

7.3. CONSTRUCTION METHODS

7.3.1. General

The Contractor shall provide all labor, materials and equipment required for both planned and unforeseen requirements throughout the project and as specified in the statement of work. All machinery and equipment property of or controlled by the Contractor, to be used throughout the project, shall meet the requisite size and capacity requirements. All work performed is subject to inspection and approval of the US Government Representative (COR). The Contractor shall always have enough experienced workers for the satisfactory execution of the work.

7.3.2. Concrete Mix

The concrete shall consist of a mixture of coarse aggregate, fine aggregate, Portland cement and water. All aggregate and cement shall be dosed when weighed. When adding aggregates, the mixture water shall be compensated by the weight of the moisture in the aggregates, this shall be determined throughout the process. The Contractor shall prepare the different types of concrete mix as required. The

Contractor will be solely responsible for the concrete mix design and quality as well as the mix to be used as required in the statement of work.

7.3.3. Control Tests

Control tests for the concrete used in the project shall be performed using applicable norms of ICONTEC or those equivalent norms of the ASSHTO, of the "American Concrete Institute (ACI)" or of the "American Society Testing and Materials (ASTM)". The Contractor shall supply at least 10 standard cylinders for each pour or for each type of concrete used in the work each day. These cylinders shall be tested by a certified testing laboratory within, 3, 7 and 28 days according to the norm AASHTO T-22 and the results will be reported to the US Government Representative (COR). The strength criteria for the concrete after 28 days shall be based on a result of the compressive strength tests indicates a minimum of 80% of the specified strength for each concrete batch . The amount of water used in the concrete shall be the minimum required to obtain such a consistency that the concrete can be easily poured. The net mixing water shall be adjusted by the moisture level of the aggregates and by the absorption of fine and coarse aggregates; this shall be in full compliance with the norms AASHTO T-84 y T-85. When concrete is air entrained there is a volume of mortar that is displaced by the air, for that reason, and in order to specify the proper cement percentage, the weight of fine aggregate shall be reduced as required to meet the contract specified concrete mix. Under average conditions the reduction of sand shall be 3% of the total weight of both fine and coarse aggregate and the air percentage shall be within 3%-6% of the concrete volume. The content of air per volume shall be determined measuring it in the concrete immediately upon pouring from the concrete mixer within the norms of AASHTO-T-121 or T-152.

7.3.4. Mixture and Transport

The Concrete may be mixed on site. Each mixer shall be designed so that the material of each mix enters without waste and the product is easily and efficiently poured into approved transport containers. The concrete shall be transported to the work site in containers that ensure the integrity of the product avoiding separation of material, loss of consistency and alterations to the strength due to the contamination/environment or poor handling. The concrete shall not be delivered by pumping if the distance exceeds 300 meters and equally if vehicles are used for a distance greater than 600 meters a mixing device/capability is required

7.3.5. Forms

Concrete shall not be poured until all the forms and reinforcement required for the pour have been installed, inspected and approved physically and certified in writing,

by US Government Representative (COR). The forms shall be manufactured utilizing material that guarantees that forms are made from adequate material and are of the type, size, quality and resistance required to realize the construction requested by the contract and as described in the plans. The forms shall properly adjust to the grade and angles in the plans, shall be staked and sufficiently rigid so as to prevent any blowouts or irregularity between form supports. The Contractor shall be solely responsible for form material preparation. The form material will be smooth, free of irregularities, dents, holes etc. Internal tension bars or wires shall be installed so as to ensure once the forms are removed there shall not appear any metal objects on the surface or stains produced by the metal. The forms shall not be removed prior to 30 hours for verticle faces, columns and similar fence/structures. Forms shall not be removed from beams, girders, arches and other load bearing fence/structures until 70% of the requisite design resistance is met.

7.3.6. Placing the reinforcement

All the reinforcement shall be placed as shown in the plans and must be tightly secured during the pouring process. Rods shall be tied together at their intersections. The support shall be appropriate wire bolsters or concrete support cubes as approved in the contract. All shop design drawings, list and details shall be submitted to the US Government Representative (COR) as part of the offer.

7.3.7. Inserted Items

Inserted items shall be placed before the concrete is poured/contact is made with the concrete. The insertion of wood or other unacceptable material shall be avoided. Concrete shall be poured and consolidated around and against inserted items.

7.3.8 **Inspection**

All completed concrete work will be inspected for adherence to the statement of work, applicable codes, structural integrity and aesthetic appearance.